RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE February 1999	
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1							R-1 ITEM NOMENCLATURE Government/Industry Co-sponsorship of University R PE 0601111D8Z			
COST*(In Millions)*	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6.942	4.801	6.351	6.762	6.891	7.011	7.226	7.345	Continuing	Continuing
GICUR/P111	6.942	4.801	6.351	6.762	6.891	7.011	7.226	7.345	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

(U) BRIEF DESCRIPTION OF ELEMENT

(U) A shared commitment between industry and Government continues to be created via the Government/Industry Co-sponsorship of University Research (GICUR) program. It will capitalize on university based research, education and training in technologies of strategic importance to national defense and also to industry. It provides an emphasis on ground-breaking research with a long-term horizon, and education and training in selected research areas which are vital to advancement of technologies The commitment is a jointly formed pool of funding and a share d management structure for sponsoring this sort of long term basic research at universities. This will provide the military with leading-edge technologies as well as reducing vulnerabilities of industries involved, increase long-term technical growth in the se areas, infuse new ideas and approaches, all of which are important for national security. Industry and government share responsibility for research focus area selection and overall direction. This program will also employ advances in information technologies and telecommunications to provide extensive connectivity among the partners and research performers from the outset. Thus, strengths of individual investigators can be effectively linked, taking advantage of geographically disbursed nation al re sources. Mechanisms will be established for personnel exchange and interactions to provide for continuing education of highly qualified researchers already working in leading edge and emerging S&T. One program area implemented is on Complex Adaptive Networks. It meets the program criteria and is vital to DoD needs. The high priority thrust in this area is providing powerful mathematical and computer modeling methods to steer technology such that cascading effects and rapid, catastrophic failure of networks (e.g., battlefield communications, electrically powered ships, multisensor surveillance/ integration) are avoided. The results are of extreme importance for the Critical Infrastructures Protection national need. The second area implemented emphasizes basic concepts for DoD needs in high frequency applications such as radars, millimeter/microwave communications and radiometry, with special attention to devices fabricated from compound semiconductors, such as gal liumarsenide. This thrust is unique to DoD. The thrust is by no means limited to silicon-based CMOS (complementary metal oxide silicon) digital topics. Research here is aimed at breakthroughs to enable rapid, correct, verifiable, implementable designs of complex circuits . Interconnect research will include causes of delays and performance limits as features become smaller (for higher speed). Higher conductivity metals and very low dielectric constant materials will be investigated, as will non-conventional, innovative fabrication processes beyond present vision. These areas require truly innovative research.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1	**R-1 ITEM NOMENCLATURE** Government/Industry Co-sponsorship of University R PE 0601111D8Z

(U) Within government, DoD has taken the lead in establishing GICUR efforts on these topics. An additional effort will now be directed at another area: Structures and Smart Materials for Reliability Advances This will be co-sponsored by industry in GICUR programs.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1	**R-1 ITEM NOMENCLATURE** Government/Industry Co-sponsorship of University R PE 0601111D8Z

COST*(In Millions)*	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6.942	4.801	6.351	6.762	6.891	7.011	7.226	7.345	Continuing	Continuing
GICUR/P111	6.942	4.801	6.351	6.762	6.891	7.011	7.226	7.345	Continuing	Continuing

(U) Project Number and Title: P111 GICUR

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY1998 Accomplishments:

(U) Implemented complex adaptive networks program covered under new MOA between electric power industry and DoD, and design/interconnect research program for complex circuits covered under another MOA between industry and DoD. Finalized goals and management structure for both GICUR program, with emphasis on interactions between DoD and industrial consortia sponsors. Jointly chose the first subareas for research and determined selection criteria for proposals. Establish multi-university, multi-investigator programs for the focus topics. ($ 6.942 Million)

(U) FY1999 Plans:

(U) Evaluate operations of first industry-driven consortia, the research programs supported and set further directions. Plan for a new thrust in smart structures and smart materials for reliability advances suitable for university-performed consortium-teamed research. Identify organizations, industry groups, existing consortia, other government agencies, etc. interested in the GICUR concept for further program development. The program in this field will be implemented. Management structure is to be finalized with emphasis on multiservice needs and opportunities being addressed. ($ 4.801 Million)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1	R-1 ITEM NOMENCLATURE Government/Industry Co-sponsorship of University R PE 0601111D8Z

(U) FY2000 Plans:

(U) Research in long range aspects of the three areas included in GICUR will continue. For complex adaptive networks, mathematical and computer modeling methods developed will be tested against real world data and situations. For complex circuits, advance design concepts and interconnect schemes will be expressed in prototype devices. For smart structures and smart materials, opportunities will be identified to take concepts and methods achieved and use them in environments which could provide indicators for reliability advances. ($ 6.351 Million)

(U) FY2001 Plans:

(U) Theoretical and experimental achievements will be fully documented to-date. Research will continue along lines both needs and opportunity driven, dependent upon success to date. ($ 6.762 Million)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1	**R-1 ITEM NOMENCLATURE** Government/Industry Co-sponsorship of University R PE 0601111D8Z

(U) B. Program Change Summary	FY1998	FY1999	FY2000	FY2001	Total Cost
Previous Presidents Budget	7.393	9.870	9.667	9.691	Continuing
Appropriated Value	7.713	5.674	0	0	Continuing
Adjustments to Appropriated Value					
a. Congressionally Directed Undistributed Reduction	0.32	-0.873	0	0	
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	0	0	0	0	
c. Other	0	0	-3.316	-2.929	
Current Presidents Budget	6.942	4.801	6.351	6.762	Continuing

Change Summary Explanation: Funding changes are due to congressional undistributed reductions and inflation adjustments.

(U) Funding: FY 1988 and FY 1999 changes are due to Congressional directed reductions. Outyear adjustments are due to programmatic changes.

(U) Schedule: N/A

(U) Technical: FY 1988 and FY 1999 changes are due to Congressional directed reductions. Outyear adjustments are due to programmatic changes.

(U) C. OTHER PROGRAM FUNDING SUMMARY COST: N/A

(U) D. ACQUISITION STRATEGY: N/A

(U) E. SCHEDULE PROFILE: N/A